

REMARKS

Claim 1 has been amended to include the limitations of claim 2, and further to recite that the network packets are Ethernet packets as disclosed, for example, in line 2 on page 7 of the original specification. The remaining changes are formal in nature.

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection of Claim 1 Under 35 USC §103(a) in view of U.S. Patent No. 7,003,638 (Brant), U.S. Patent Publication No. 2002/0184394 (Athanas), and “MAC Layer Proposal With IP QoS Allowances For BWA” (Jorgensen)

This rejection has been rendered moot by the amendment of claim 1 to include the limitations of claim 2.

2. Rejection of Claims 2 and 4 Under 35 USC §103(a) in view of U.S. Patent Nos. 7,003,638 (Brant) and 6,898,654 (Senior), U.S. Patent Publication No. 2002/0184394 (Athanas), and “MAC Layer Proposal With IP QoS Allowances For BWA” (Jorgensen)

This rejection that the Brant and Senior patents, and the Athanas and Jorgensen publications, all fail to disclose or suggest, whether considered individually or in any reasonable combination:

- a mechanism of assembling a plurality of Ethernet network packets having MAC frames together as a super-size network packet in which the super-size network packet is transferred into a plurality of USB packets while receiving a Bulk In/Out request packet;
- the USB packets having a maximum packet sized defined for the USB endpoint, and
- the USB packets being transmitted out within a burst cycle of a Bulk In/Out transaction, as originally recited in claim 1, so as to improve and enhance the throughput performance of the network packets over the USB bus. Furthermore, none of the cited references discloses or suggests:

- enabling a USB driver to assemble the plurality of network packets having MAC frames together and appending proprietary bytes to every network packet being received to delineate the end of each network packet and form the super-size network packet, as originally recited in claim 2, and now recited in claim 1. Basically, none of the references cited by the Examiner discloses or suggests the claimed assembly of Ethernet packets into a super-size network packet (thereby avoiding having to issue and process a whole series of request packets), and then disassembling the super-size packet ("transferring the super-size network packet. . .) into USB packets *while* receiving the Bulk In/Out request packet and transmitting the packets out *within* a burst cycle of the Bulk In/Out transaction.

The Brant patent discloses a functional unit 300 coupled to an interface 200 for performing a peripheral device function on data accessed by the interface 200, and fails to disclose any mechanism of assembling a plurality of Ethernet network packets having MAC frames together as a super-size network packet, as claimed, much less one that assembles the packets while receiving a Bulk In/Out request and transmits the packets out with a burst cycle of the Bulk In/Out transaction, as claimed. The Athanas publication, on the other hand, discloses a data storage system having a controller system 80 coupled between an Ethernet interface 60 and a memory 90 for translating information packets received from a client system between a first protocol and a second protocol, and also fails to disclose the claimed mechanism for assembling Ethernet network packets having MAC frames into a super-size network packet, while the Jorgensen publication is directed to a provision for multiplexing IP packets within a single MAC frame, which has nothing to do with assembling Ethernet network packets or any other network packets into a super-size network packet, as claimed.

The present invention replaces conventional USB-compliant Ethernet adaptors that transmit network packets with endpoints defined according to the USB interface specification, in which the adaptor utilizes a USB short packet mechanism to encapsulate the network packets and delineate segments of the network packets in order to complete the transfer between the network packets and USB packets. A problem with the conventional adaptor is that when

transmitting or receiving Ethernet packets having Message Authentication Codes (MACs), the adaptor will generate short packets to fill the buffer, which in turn will cause generation of Bulk In/Out request packets for every network packet having an Ethernet MAC frame, so that for each and every received or transmitted network packet having an Ethernet MAC frame, a Bulk In/Out request packet must be transmitted to the driver regardless of size, which can significantly compromise the throughput of the adaptor. In addition, when a burst of network packets is transmitted, the USB driver will start processing a series of queuing Bulk In/Out request packets only after processing of a request packet currently being serviced has been completed by the driver, so that throughput may be limited by the performance of the system's software driver and MAC frame burst patterns. These problems are solved according to the present invention by eliminating the need to issue a request packet each time a network packet is processed by:

- utilizing a single super-sized network packet (thereby preventing the driver from issuing a long series of request packets), and then
- disassembling the super-size packet into USB packets while receiving a Bulk In/Out request, and
- transferring the USB packets out within a burst cycle of a Bulk In/Out transaction.

None of the three references cited by the Examiner even remotely suggests having the interface process a single super-sized network packet, and then disassembling the packet into USB packets while receiving a Bulk In/Out request, and transferring the USB packets out within a burst cycle of the Bulk In/Out transaction.

These deficiencies are not made up for by the Senior patent, which is cited for its teaching of receiving an I/O request packet and transmitting this packet to a USB driver, but which provides USB hub drivers to make calls 430 to user-mode applications such as rebalancing-enabler 440 through a "WMI" interface 420, so that the user-mode applications can request services and information from USB devices through the WMI. This has nothing to do with the claimed invention, and is not suggestive of modifying the configurable peripheral interface of Brant, the protocol translation of Athanas, or the system and method for multiplexing IP packets

with MAC frames of Jorgensen, whether considered individually or in any reasonable combination, to obtain the claimed invention.

Further, the teachings of Senior are not suggestive of appending proprietary bytes to every network packet received to delineate the end of the network packet and form the super-size network packet as originally recited in claim 2 and now recited in claim 1, or of proceeding with the super-size network packet encapsulation process after receiving the Bulk I/O request packet and transferring the super-size packet into USB packets *and* a short packet before transmitting the USB packets out during a Bulk In/Out transaction burst cycle.

As a result, withdrawal of the rejection of claims 2 and 4 is respectfully requested.

3. Rejection of Claim 3 Under 35 USC §103(a) in view of U.S. Patent Nos. 7,003,638 (Brant) and 6,898,654 (Senior), U.S. Patent Publication Nos. 2002/0184394 (Athanas) and 2003/0063569 (Kalliokulju), and “MAC Layer Proposal With IP QoS Allowances For BWA” (Jorgensen)

This rejection is respectfully traversed on the grounds that the Kalliokulju publication, like the Brant and Senior patents and the Athanas and Jorgensen publications fails to disclose or suggest assembling USB packets into a super-size packet, as claimed, much less the inclusion of proprietary bytes comprises length and length bar to represent the ending position of each MAC frame network packet being received and to delineate boundaries thereof, as claimed. Instead, the Kalliokulju patent is directed to the inclusion of RTP header information in a radio network controller. As a result, withdrawal of the rejection of claim 3, under 37 CFR §103(a) is respectfully requested.

4. Rejection of Claims 5 and 6 Under 35 USC §103(a) in view of U.S. Patent Nos. 7,003,638 (Brant), 6,898,654 (Senior), and 6,222,823 (Smith), U.S. Patent Publication Nos. 2002/0184394 (Athanas), and “MAC Layer Proposal With IP QoS Allowances For BWA” (Jorgensen)

This rejection is respectfully traversed on the grounds that the Smith patent, like the Brant and Senior patents and the Athanas and Jorgensen publications fails to disclose or suggest

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assembling USB packets into a super-size packet, as claimed. Instead, the Smith patent discloses a public network 10 having a plurality of switches operable in asynchronous transfer mode and associated with an admission control function 18 and dynamic bandwidth controller 20 for controlling traffic entering the network through one of the local switches, and in which a usage parameter control device 22 dynamically alters the priority of data cells received at an input port 24 of the network, the dynamic bandwidth controller acting to detect incoming cells supplied to the input port and cause the admission control function to allocate bandwidth for the transmission of cells to the destination end-system based on the detection. The method and system of Smith are therefore clearly not suggestive of the claimed assembly of USB packets into a super-sized network packet, and withdrawal of the rejection of claims 5 and 6 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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